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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,348	10/15/2003	Mark G. Frei	011738.00152	7858

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EXAMINER

ROBERTS, DARIN

ART UNIT	PAPER NUMBER
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3762

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,348	Applicant(s) FREI ET AL.	
	Examiner Darin R. Roberts	Art Unit 3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 14, 16, 18-26, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 6, 9-13, 15, 17, 27, 28 and 31-37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/23/04; 4/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **1-5, 7, 8, 14, 18-20, 21, 22, 29, & 30**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferguson et al. (US 20030140039 A1) in view of DiLorenzo (US 6819956 B2).

In reference to **claims 1-3, 5, 7, 8, 18-20, & 29**, the Ferguson et al. publication does not teach receiving neurological signals however Ferguson et al. does teach the use of a system capable of detecting signal quality comprising the steps of receiving

signals from monitoring elements referred to as sensors (see pp. [0007]), processing a received signal (see pp. 0017)) and generating a plurality of data points for a signal in a moving time window (see pp. [0218]). The Ferguson et al. patent also teaches detecting a received signal has poor signal quality by determining that an amount of the data points exhibiting poor signal quality within the moving time window has exceeded a predetermined threshold (see pp. [0028] & pp. [0218]) and ignoring the received signal experiencing poor signal quality in signal processing (see pp. [0218]). The Ferguson et al. patent also teaches that such a system can be used in scientific and medical applications (see pp. [0248]), thus allowing it to be used in conjunction with a medical device such as the applicant's claimed invention. The Ferguson et al. system is also inherently a closed loop system because it is a system that uses feedback to affect its processes.

The DiLorenzo patent teaches the use of neurological control system for modulating activity of any component comprising the entirety or portion of the nervous system used to receive and interpret neurological signals as well as derive neural modulation signals to deliver to the desired nervous system component (see abstract).

The Ferguson et al. publication teaches "...a graphical user interface ... whereby a user or operator may view the received data set, i.e., to visually inspect the data for bad data points ..." (see pp. [0028]). The Ferguson et al. publication also teaches that "... corrected data may comprise corrected training data which includes corrected target input data and corrected target output data ..." (see pp. [0033]).

Thus it would have been obvious to one of ordinary skill in the art to combine the aforementioned aspects of the Ferguson et al. with the neural modulation techniques of the DiLorenzo patent to prevent unnecessary neural modulation based on a signal that can be seen as noise.

In reference to **claim 4, 21, & 22**, the Ferguson et al. publication does not teach receiving neurological signals, however Ferguson et al. does teach that if one of the inputs or outputs happens to be missing at the desired time for fifty percent or more of the training patterns, conventional methods would discard these patterns, leading to no training for those patterns during the training mode and no reliable predicted output during the run mode (see pp. [0008]). Ferguson et al. also teaches a system capable of being used for medical purposes consisting of tools for "cutting" the bad data from a data set.

The DiLorenzo patent teaches the use of neurological control system for modulating activity of any component comprising the entirety or portion of the nervous system used to receive and interpret neurological signals as well as derive neural modulation signals to deliver to the desired nervous system component (see abstract).

Thus it would have been obvious to one of ordinary skill in the art to combine the aforementioned aspects of the Ferguson et al. with the neural modulation techniques of the DiLorenzo patent to do away with unnecessary or less important input signals and allow for the conservation of memory.

In reference to **claim 14**, the Ferguson et al. publication does not teach receiving neurological signals, however Ferguson et al. does teach a method of achieving a time-

merge operation, by either extrapolating, interpolating, averaging, or compressing the data in each column over each time-region so as to give input values $x'(t)$ that are on the appropriate time-scale (see pp. [0183]).

The DiLorenzo patent teaches the use of neurological control system for modulating activity of any component comprising the entirety or portion of the nervous system used to receive and interpret neurological signals as well as derive neural modulation signals to deliver to the desired nervous system component (see abstract).

Thus it would have been obvious to one of ordinary skill in the art to combine the aforementioned aspects of the Ferguson et al. with the neural modulation techniques of the DiLorenzo patent to update the system in real time and allow for timely neural modulation

In reference to **claim 30**, the Ferguson patent does not teach receiving neurological signals, however Ferguson et al. does teach "After the outliers have been removed from the data, the removed data may optionally be replaced, thereby "filling in" the gaps resulting from the removal of outlying data. Various techniques may be brought to bear to generate the replacement data, including, but not limited to, clipping, interpolation, extrapolation, spline fits, sample/hold of a last prior value, etc., as are well known in the art".

The DiLorenzo patent teaches the use of neurological control system for modulating activity of any component comprising the entirety or portion of the nervous system used to receive and interpret neurological signals as well as derive neural modulation signals to deliver to the desired nervous system component (see abstract).

Thus it would have been obvious to one of ordinary skill in the art to combine the aforementioned aspects of the Ferguson et al. with the neural modulation techniques of the DiLorenzo patent to determine whether the data must be replaced after clipping.

Claims 16, 23 & 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferguson et al. (US 20030140039 A1) in view of DiLorenzo (US 6819956 B2).

In reference to **claim 16**, the Ferguson et al. publication does not teach receiving neurological signals or treatment therapy, however it does teach a closed-loop feedback control system.

The DiLorenzo patent teaches receiving a neurological signal (see abstract) as well as providing a closed-loop feedback control system (see column 42, lead line 66)

Thus it would have been obvious to one of ordinary skill in the art to combine the system of the Ferguson publication with the device and system of the DiLorenzo to eliminate the occurrence unnecessary stimulation based on poor or stray signals.

In reference to **claims 23 & 24-27**, the Ferguson et al. publication does not teach a medical device wherein the nervous system disorder is selected from the group consisting of a disorder of a central nervous system, a disorder of a peripheral nervous system, and mental health disorder, and psychiatric disorder. However Ferguson et al. does teach that their system can be used for medical purposes.

The DiLorenzo patent teaches electrical stimulation for control of movement disorders and other neurological disease and detecting neurological signals via sensors (see abstract & column 1, lead lines 25-28).

Thus it would have been obvious to one of ordinary skill in the art to combine the aforementioned aspects of the Ferguson et al. publication with the treatment abilities of the DiLorenzo patent to eliminate the occurrence unnecessary stimulation based on poor or stray signals.

Allowable Subject Matter

Claims 6, 9-13, 15, 17, 28, 31-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darin R. Roberts whose telephone number is (571) 272-5558. The examiner can normally be reached on 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela D. Sykes can be reached on (571) 272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-9900.

Art Unit: 3762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Darin Roberts
Patent Examiner
Art Unit 3762

D. R.